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Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
Amendment of the Commission's	)	GEN Docket No. 90-314
Rules to Establish New Personal	)	
Communications Services	)	

Comments

Omnipoint Corporation , Inc. ("Omnipoint") hereby submits its comments on various Petitions for Reconsideration to the Commission's Second Report and Order for PCS in the above-captioned proceeding (R & O) concerning the final rules for Personal Communications Services (PCS).

I. Introduction and Executive Summary

Omnipoint applauds and supports the issuance of the Commission's Second Report and Order for PCS. The rules for PCS in the R&O will, for the most part, rapidly propel the implementation of a new and innovative communications system in the United States and, potentially, for a large part of the world.

While Omnipoint concurs with many of the comments of various petitions for reconsideration in the instant preceding (for example, on increasing the maximum ERP to at least 1000 Watts for licensed base stations), Omnipoint has some concerns about a number of issues raised.

The first category of major issues concerns fair access to the unlicensed spectrum.

A.) For example, reconsideration proposals such as Motorola's, that would require a maximum channelization of 1.25 MHz in the unlicensed isochronous bands, imposes an unfair restriction on a number of technologies. This recommendation is technically indefensible. There is no real reason for this recommendation other than to eliminate access to the unlicensed bands by systems which can provide multiple new types of services in a single device. Regressive proposals which try to eliminate new technologies should not be considered by the Commission.

Indeed, with respect to the current unfair treatment of 5 MHz channels in the unlicensed isochronous bands, Omnipoint supports the position of Apple Computer, Ericsson, Rockwell, Cablelabs and more than 70% of the members of Telocator T&E Committee that 5 MHz channels should be allowed throughout the entire 20 MHz of the isochronous band. As has been shown by many, a simple rule allowing the maximum isochronous bandwidth of a single RF channel to up to 5 MHz and not requiring any specific subchannel boundaries will provide far more efficient use of the total isochronous band in real world terms.

B.) A second area of concern regarding the unlicensed bands deals with the so called "packing rules", which describe the search methodology to choose an available frequency within the isochronous band. Northern Telecom, in its petition for reconsideration, seeks to eliminate the use of any search methodology. Northern has incorrectly implied that any "packing rule" is likely to

increase interference into the adjacent bands. In reality, by allowing devices to search for available spectrum in a methodical and governed approach, interference between systems will be reduced. Therefore, Omnipoint proposes that a fair "packing rule", not discriminatory to any system, be implemented for access to unlicensed operation. Omnipoint proposes language below (section IV, page 10) to replace the text in §15.321 (b) which currently requires that searches begin from the band edges rather than a less interference prone part of the band. The language in Omnipoint's proposal is supported by a majority of the members of the Telocator Technical and Engineering Committee.

C.) Also concerning the unlicensed bands, the proposed rules in the R&O for duplex operation (whether TDD or FDD) require that all devices, including those responding, perform a Listen Before Talk (LBT) operation on the transmit and receive time-and-spectrum window (i.e. currently 10 mS which we and others, such as a majority of the Telocator Technical and Engineering Committee and other WINTech members, strongly recommend be expanded to 20 mS) before transmitting. Thus, currently before acknowledging, a responding device of a duplex pair would also have to perform the LBT operation with respect to the same spectrum window. This waiting period (of 10 or 20 mS) by the responding half of the duplex pair virtually prevents true duplex communications. Omnipoint opposes the suggested text, from Northern Telecom in its petition for reconsideration, of §15.321 (c) (11), which proposes an exception to the LBT, because this exception is unfair and predatory to all systems. Omnipoint, however, agrees that Northern Telecom's proposed language of §15.321 (c) (10) should be included, which allows a responding device to establish a duplex connection immediately. The proposed text of §15.321 (c) (10) would allow a formalized, methodical process for all systems to obtain a duplex connection,

thus eliminating the need for the bypass exception proposed by Northern Telecom in §15.321.(c) (11).

D.) AT&T states in the title of its section II: "THE COMMISSION SHOULD CLARIFY THAT THE UNLICENSED BAND IS NOT AVAILABLE FOR RADIO COMMON CARRIER SERVICES"[1]. While Omnipoint takes no position on whether the unlicensed bands could or should be generally used for fee-based services that could otherwise be provided in licensed spectrum, this proposal by AT&T should not in any way be used to justify barring the licensed PCS community from using any devices or techniques which allow interoperability with the unlicensed bands. Since many PCS services can be imagined where the distinctions AT&T is trying to make get blurred, this is an area which must be dealt with very carefully if it is considered at all by the Commission.

E.) Omnipoint agrees with Telocator[2] and others that the power limit in the R&O on base stations of 62 Watt ERP will have a significant negative impact on PCS and strongly supports raising this limit to at least 1,000 Watts ERP. In addition, Omnipoint agrees with Telocator regarding the need to "modify the 10 millisecond ("mS") /X, where X is an integer, period specified in the listen-before-talk ("LBT") rule, and corresponding frame time, to 20 mS/X to permit the widest range of present and future technologies to operate in the unlicensed band in the most equitable manner"

F.) Finally, Motorola[3] among others also proposes the Commission designate which of the paired bands in any spectrum block should be used for the uplink

[1] AT&T Petition for Limited Clarification and Reconsideration (p6, sec II)
[2] Telocator Petition for Reconsideration(p 1, sec I)
[3] Motorola Petition for Reconsideration and Clarification of PCS Second Report and Order (p 8, sec V(B))

and downlink in licensed FDD systems. Motorola even makes the overtly discriminatory proposals of A.) imposing power and antenna height limitations for TDD systems and B.) restricting the power of a TDD base operating in half the band to have a peak transmit power equal to that of a handset. There is absolutely no technical reason for proposals such as Motorola's, since the Commission has already established rules for limiting out of band interference. As long as every technology and operator meets these emission guidelines, there is no reason to single out specific techniques to penalize arbitrarily. Omnipoint opposes any effort to limit the freedom to employ new technologies in the licensed bands by designating the way in which allocated frequency pairs are used or by limiting the power and/or antenna heights of specific technologies within any licensed frequency bands. For the Commission to do so would effectively limit the flexibility to use those bands in the most beneficial and spectrally efficient manner.

II. Fair Access to Unlicensed Spectrum

In supporting the concept of an unlicensed PCS allocation, Motorola states that "The [original WINForum proposed] etiquette, which guarantees fair access to the spectrum while supporting essentially unfettered innovation, is the very heart of the unlicensed PCS vision."[4] However, fair access by definition would provide a set of rules which, when are applied to the process, neither restrict nor discriminate against any system based on any particular technology. The

[4] Motorola Petition for Reconsideration and Clarification of PCS Second Report and Order (p 10, sec VI)

Motorola proposed restriction of a maximum channelization of 1.25 MHz is designed to block specific technologies from using the unlicensed bands.

Two synonyms for "fair" are equitable and impartial. Recent products which employ wider band technologies up to 5 MHz are not given an impartial or equitable access to the designated isochronous unlicensed frequencies. The proposed additional restriction of eliminating these products altogether are designed to give enormous competitive advantages to systems which utilize older narrow band technology. Narrowband systems require that the consumer purchase multiple devices and systems to deliver even a subset of the services and benefits which a single, low cost, wideband system can provide. This commercial disadvantage would thus be borne by the consumer. If only narrowband systems are allowed, a simplistic set of basic features using single function devices are all that will be available. Omnipoint believes the consumer is intelligent enough to discern price/performance advantage and the benefits of choice. Market choice is possible only if the unlicensed band rules are based on true "fair" access.

Further, contrary to the arguments of those who object to 5 MHz channels, these wider bandwidth formats not only allow more efficient use of resources, they do not hog bandwidth, since in the time domain, they transmit less frequently to convey the same amount of information as narrowband systems and they reduce interference by spreading their energy. In fact, Omnipoint's system allows more sharing relative to almost any other technology approaches. For example, the potential interference to a CT2 based system is very small since the energy from a 5 MHz channel is spread over a bandwidth 50 times that of a 100 kHz system, and is only active for a few microseconds at a time. Thus, the interference seen

by a narrowband receiver will be very low relative to its own intended transmitter. In contrast, a CT2 system effectively interferes with several thousand kilohertz continuously to provide one voice channel.

The need to allow up to 5 MHz wide band systems access is also crucial in the larger picture of PCS. The WINTech group and some petitioners seeking reconsideration are concerned only with unlicensed operation. As many potential licensed service providers have stated to the Commission, the Joint Technical Committee on Wireless Access (JTC), and in Telocator and other forums, unlicensed operation using the same handsets that are used in the licensed bands is fundamental to the success of mass distribution access by the general public. This can be accomplished by removing the "traffic lane" approach to channelization within the entire isochronous bands and by including a set of fair "packing rules" that allow any of the proposed systems a chance to operate in an organized, predictable fashion. Text for a set of packing rules, proposed to replace the language in § 15.321 (b) is included in section III, page 10 of this document.

III. Channelization of the Isochronous Band

The analogy by Motorola[5] of highway lanes to the proposed channelization into narrow bands also dictates what type of vehicle (RF bandwidth and capability) can be allowed on the highway. It is interesting to note that a traffic engineers' approach to increasing capacity is to broaden a roadway, encourage car pools

[5] Motorola Petition for Reconsideration and Clarification of PCS Second Report and Order (p 11, sec VI)

with more than one user per vehicle (i.e., per frequency), and especially to focus on mass transportation techniques such as buses, trains, etc. (TDMA, CDMA). The insistence on narrowband channelization is discriminatory, is not technically defended, and was not the conclusion of the majority of WINTech participants. Motorola has recommended that even the current lower isochronous band, which the R&O allows up to two 5 MHz channels, be reallocated into 8x1.25 MHz channels. This recommendation is technically indefensible.

In fact, the current lower isochronous structure will actually disallow a 5 MHz system because of the rigid subchannel boundaries, since emissions from the upper band edge of the licensed band and the lower band edge of the asynchronous band will interfere with the forced 5 MHz specific channels. Any true coexistence with other systems will only occur when the "traffic lane" channelization is removed and a structured process for operation within the band is implemented as suggested below in section IV. Motorola's apparent attempt at restricted competition and frequency grabbing is a complete reversal of the PCS charter set forth by the FCC.

Indeed, with respect to the current unfair treatment of 5 MHz channels in the unlicensed isochronous bands, Omnipoint supports the position of Apple Computer, Ericsson, Rockwell, Cablelabs and more than 70% of the members of Telocator Technical & Engineering Committee that 5 MHz channels should be allowed throughout the entire 20 MHz of the isochronous band.

IV. Packing Rule

Northern Telecom, in its petition for reconsideration states: "In an effort to maximize the ability of narrow band and broad band to [sic] devices to share the unlicensed spectrum, the Commission imposed a "packing rule" that requires devices using less than 625 kHz to start searching for a vacant channel at one end of the band, and devices using bandwidths wider than 625 kHz to start their search at the other end of the band. This packing requirement is likely to increase interference into the adjacent bands"[6] Northern goes on to indicate that the Commission's "packing" rule will increase the probability of a "deadly embrace". While Omnipoint agrees that the Commission's current packing rule can cause interference, Northern has incorrectly stated that any "packing rule" is likely to increase interference into the adjacent bands. Omnipoint believes that by allowing devices to search for available spectrum in a methodical and governed approach, starting away from the band edges of each isochronous band and working toward the edges, interference between systems will be reduced. What is needed is a fair "packing rule", not elimination of a methodology.

Therefore, Omnipoint proposes that a fair "packing rule" be implemented for access to unlicensed operation with text to replace Section 15.321 (b) as follows: "Intentional radiators with an intended emission bandwidth of less than or equal to 2.5 MHz shall start searching for an available time and spectrum window anywhere within the range of 2.0 to 3.0 MHz from the isochronous spectrum boundaries and search upward from that point. Intentional radiators with an intended emission bandwidth greater than 2.5 MHz shall start searching for an

[6] Northern Telecom Petition for Reconsideration(Appendix A, p A-2, sec 2)

available time and spectrum window anywhere within the range of 2.0 to 3.0 MHz from the isochronous spectrum boundaries and search downward from that point."

Without the rule change above, wider band systems (2.5 to 5.0 MHz) would be forced against the band edges of the spectrum block by arbitrarily placed narrowband devices and the adjacent channel noise from high powered licensed devices and asynchronous devices will interfere with the wideband isochronous device. Narrow band devices do not need to be randomly distributed throughout the isochronous band and should not be allowed to do so since that prevents any wider band devices from gaining access. Conversely, narrowband devices should be authorized an efficient and controlled procedure to avoid interference and quickly seize channels.

In a meeting attended by a number of companies including Omnipoint, Rockwell International, Cablelabs, Ericsson, and several others, a bandwidth of 2.5 MHz was chosen for this proposal because it represents half of the maximum allowable bandwidth of an intentional radiator transmitting in the unlicensed PCS band. The channel search acquisition starting point would be anywhere within the range of 2.0 to 3.0 MHz from the unlicensed edges allows the maximum flexibility of initialization, thus avoiding collisions. The range option allows the systems to select a random starting point not common to other systems that might otherwise cause collisions. It permits any channel bandwidth to be used yet has control mechanisms for efficient and equitable spectrum usage. This position and proposed language was supported by more than 70% of the members of Telocator Technical & Engineering Committee.

V. Duplex Operation § 15.321 (c) (10)

The proposed rules in the R&O for duplex operation (whether TDD or FDD) require that all devices, including those responding, perform a Listen Before Talk (LBT) operation on the transmit and receive time-and-spectrum window (i.e. currently 10 mS which we and others, such as a majority of both the Telocator Technical and Engineering Committee and WINTech, strongly recommend a LBT be expanded to 20 mS) before transmitting. Thus, currently before acknowledging, a responding device of a duplex pair would also have to perform the LBT operation for 10 mS with respect to the same spectrum window. This waiting period by the responding half of the duplex pair virtually prevents true duplex communications.

Omnipoint opposes the suggested text, from Northern Telecom in its petition for reconsideration, of §15.321 (c) (11), which proposes an exception to the LBT, because this exception is unfair and predatory to all systems. Omnipoint, however, agrees that Northern Telecom's proposed language of §15.321 (c) (10) should be included, which allows a responding device to establish a duplex connection immediately.

Omnipoint recommends that language for a new §15.321 (c) (10) be included: "An initiating device may attempt to establish a duplex connection by monitoring both its intended transmit and receive time and spectrum windows in accordance with §15.321 (c). Time and spectrum window access selection for the initiating device shall be based on the higher measured power of the intended transmit or receive time and spectrum windows. If the power detected by the responding

device can be decoded as a duplex connection signal from an interoperable device (the initiating device), then the responding device may immediately begin transmitting on the receive time and spectrum window of the initiating device." Omnipoint proposes that this text be adopted in order to allow a formalized, methodical process for all systems to obtain a duplex connection, thus eliminating the need for the bypass exception proposed by Northern Telecom. This proposed language is also supported by a majority of the members of WINTech.

VI. Clarification of the Unlicensed Band for "Common Carrier Services"

AT&T has, as the title of its section II: "THE COMMISSION SHOULD CLARIFY THAT THE UNLICENSED BAND IS NOT AVAILABLE FOR RADIO COMMON CARRIER SERVICES"[7]. While Omnipoint takes no position on whether the unlicensed bands could or should be generally used for fee-based services that could otherwise be provided in licensed spectrum, this proposal should not be in any way used to justify barring the licensed PCS community from using any devices or techniques which allow interoperability with the unlicensed bands. PCS is predicated on both private and public access with a single handset, not multiple devices for the home and for the car and for the office, etc.

It is unclear exactly what AT&T would want to prevent, since many licensed PCS services operators are planning to offer monthly plans which allow the same handset to be used in unlicensed frequencies while the user is on its own premises. Since both licensed and unlicensed base stations may be connected

[7] AT&T Petition for Limited Clarification and Reconsideration (p6, sec II)

to the same PCS network, proposed rules limiting the use of unlicensed bands must be examined very carefully.

VII. Power Limits

Omnipoint agrees with Telocator[8] and others that the power limit in the R&O on base stations of 62 Watt ERP will have a significant negative impact on the ability of PCS to provide economical coverage, particularly in rural and low density suburban areas. The negative impact of the limit is particularly severe on systems employing TDMA or CDMA access methodologies. Very high base station powers are consistent with the R&O limit on mobile/portable power. Thus, Omnipoint strongly supports raising this limit to at least 1,000 Watts ERP.

VIII. Listen-Before-Talk Period and Frame Time

In addition, Omnipoint agrees with Telocator regarding the need to "modify the 10 millisecond ("mS")/X, where X is an integer, period specified in the listen-before-talk ("LBT") rule, and corresponding frame time, to 20 mS) to permit the widest range of present and future technologies to operate in the unlicensed band in the most equitable manner".[9] Not only will the 20 mS frame time avoid time/spectrum collisions but will it permit a greater range of technologies to use the unlicensed bands.

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[8] Telocator Petition for Reconsideration(p 1, sec I)
[9] Telocator Petition for Reconsideration(p 19, sec VII)

IX. Designation of Uplink and Downlink Frequency Pairs

As a final matter, Motorola[10] among others also proposes the Commission designate which of the paired bands in any spectrum block should be used for the uplink and downlink in FDD systems. Motorola even makes the overtly discriminatory proposals of A.) imposing power and antenna height limitations for TDD systems and B.) restricting the power of a TDD base operating in half the band to have a peak transmit power equal to that of a handset. There is absolutely no technical reason for proposals such as Motorola's, since the Commission has already established rules for limiting out of band interference. As long as every technology and operator meets these emission guidelines, there is no reason to single out specific techniques to penalize arbitrarily. Omnipoint opposes any effort to limit the freedom to employ new technologies in the licensed bands by designating the way in which allocated frequency pairs are used or by limiting the power and/or antenna heights of specific technologies within any licensed frequency bands. For the Commission to do so would effectively limit the flexibility to use those bands in the most beneficial and spectrally efficient manner.

X. Conclusion

While Omnipoint applauds and supports the issuance of the Commission's Second Report and Order for PCS, it has some concerns about a number of

[10] Motorola Petition for Reconsideration and Clarification of PCS Second Report and Order (p 8, sec V(B))

issues raised in various petitions for reconsideration. These areas of concern appear, for the most part, to be designed to limit the implementation of new technologies. The issues and Omnipoint positions are documented below.

- Omnipoint disagrees with proposals such as Motorola's that would require a maximum channelization of 1.25 MHz in the unlicensed isochronous bands because it imposes an unfair restriction on a number of technologies. Omnipoint supports the position of Apple Computer, Ericsson, Rockwell, Cablelabs and more than 70% of the members of Telocator Technical & Engineering Committee that 5 MHz channels should be allowed throughout the entire 20 MHz of the isochronous band.
- Omnipoint opposes Northern Telecom's position, which seeks to eliminate the use of any "packing rules", which describe the search methodology to choose an available frequency within the isochronous band. Omnipoint proposes that a fair "packing rule", not discriminatory to any system, be implemented for access to unlicensed operation and proposes language to replace the text in §15.321 (b).
- Omnipoint opposes the suggested text, from Northern Telecom in its petition for reconsideration, of §15.321 (c) (11), which proposes an exception to the LBT because this exception is unfair and predatory to all systems. Omnipoint, however, agrees that Northern Telecom's proposed language of §15.321 (c) (10) should be included, which allows a responding device to establish a duplex connection immediately.

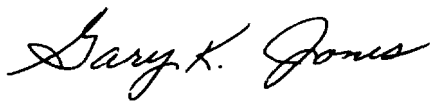
- Regarding AT&T's Section II of its Petition for Limited Clarification and Reconsideration, Omnipoint takes no position on whether the unlicensed bands could or should be generally used for fee-based services that could otherwise be provided in licensed spectrum. However, this proposal by AT&T should not in any way be used to justify barring the licensed PCS community from using any devices or techniques which allow interoperability with the unlicensed bands.
- Omnipoint agrees with Telocator[11] and others that the power limit in the R&O on base stations of 62 Watt ERP will have a significant negative impact on PCS and strongly supports raising this limit to at least 1,000 Watts ERP. In addition, Omnipoint agrees with Telocator regarding the need to "modify the 10 millisecond ("mS")/X, where X is an integer, period specified in the listen-before-talk ("LBT") rule, and corresponding frame time, to 20 mS to permit the widest range of present and future technologies to operate in the unlicensed band in the most equitable manner"
- Omnipoint opposes any effort, such as Motorola's proposal, to limit the freedom to employ new technologies in the licensed bands by designating the way in which allocated frequency pairs are used or by limiting the power and/or antenna heights of specific techniques such as TDD within any licensed frequency bands. There is absolutely no technical reason for proposals such as Motorola's, since the Commission has already established rules for limiting out of band interference.

[11] Telocator Petition for Reconsideration(p 1, sec I)

Omnipoint respectfully requests the Commission consider these concerns and recommendations in its deliberations regarding the Second Report and Order for PCS .

Respectfully Submitted,

OMNIPOINT CORPORATION, INC.



by _____

Gary K. Jones, Director of Standards Policy

CERTIFICATE OF SERVICE

I, Mark J. Tauber, hereby certify that a copy of the attached "Comments" of Omnipoint Corporation, Inc. was sent, by first class U.S. Mail, on January 3, 1994, to the following addressees:

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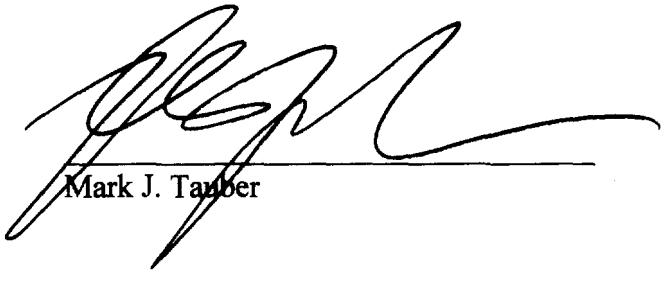

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